

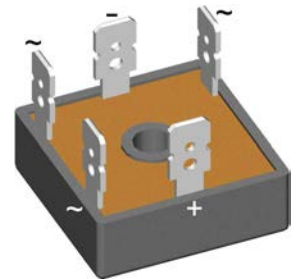
Standard Rectifier Module

| | |
|-------------------------|-------|
| 3~ Rectifier | |
| $V_{RRM} =$ | 800 V |
| $I_{DAV} =$ | 27 A |
| $I_{FSM} =$ | 550 A |

3~ Rectifier Bridge

Part number

VUO36-08NO8



 E72873



Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very low forward voltage drop
- Improved thermal behaviour

Applications:

- Diode for main rectification
- For three phase bridge configurations
- Supplies for DC power equipment
- Input rectifiers for PWM inverter
- Battery DC power supplies
- Field supply for DC motors

Package: FO-B

- Isolation Voltage: 3000 V~
- Industry standard outline
- RoHS compliant
- 1/4" fast-on terminals
- Easy to mount with one screw

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| Rectifier | | | | Ratings | | | |
|------------|--|-----------------------------|-------------------|------------------------------|------|-----------------------------------|-------------------|
| Symbol | Definition | Conditions | | min. | typ. | max. | Unit |
| V_{RSM} | max. non-repetitive reverse blocking voltage | | | | | 900 | V |
| V_{RRM} | max. repetitive reverse blocking voltage | | | | | 800 | V |
| I_R | reverse current | $V_R = 800$ V | | $T_{VJ} = 25^\circ\text{C}$ | | 40 | μA |
| | | $V_R = 800$ V | | $T_{VJ} = 150^\circ\text{C}$ | | 1,5 | mA |
| V_F | forward voltage drop | $I_F = 15$ A | | $T_{VJ} = 25^\circ\text{C}$ | | 1,04 | V |
| | | $I_F = 45$ A | | | | 1,23 | V |
| | | $I_F = 15$ A | | $T_{VJ} = 125^\circ\text{C}$ | | 0,93 | V |
| | | $I_F = 45$ A | | | | 1,18 | V |
| I_{DAV} | bridge output current | $T_C = 85^\circ\text{C}$ | | $T_{VJ} = 150^\circ\text{C}$ | | 27 | A |
| | | rectangular | $d = \frac{1}{3}$ | | | | |
| V_{FO} | threshold voltage | | | $T_{VJ} = 150^\circ\text{C}$ | | 0,76 | V |
| r_F | slope resistance | | | | | 9,1 | m Ω |
| | | | | | | } for power loss calculation only | |
| R_{thJC} | thermal resistance junction to case | | | | | 7 | K/W |
| R_{thCH} | thermal resistance case to heatsink | | | | 1 | | K/W |
| P_{tot} | total power dissipation | | | $T_C = 25^\circ\text{C}$ | | 17 | W |
| I_{FSM} | max. forward surge current | $t = 10$ ms; (50 Hz), sine | | $T_{VJ} = 45^\circ\text{C}$ | | 550 | A |
| | | $t = 8,3$ ms; (60 Hz), sine | | $V_R = 0$ V | | 595 | A |
| | | $t = 10$ ms; (50 Hz), sine | | $T_{VJ} = 150^\circ\text{C}$ | | 470 | A |
| | | $t = 8,3$ ms; (60 Hz), sine | | $V_R = 0$ V | | 505 | A |
| I^2t | value for fusing | $t = 10$ ms; (50 Hz), sine | | $T_{VJ} = 45^\circ\text{C}$ | | 1,52 | kA ² s |
| | | $t = 8,3$ ms; (60 Hz), sine | | $V_R = 0$ V | | 1,48 | kA ² s |
| | | $t = 10$ ms; (50 Hz), sine | | $T_{VJ} = 150^\circ\text{C}$ | | 1,11 | kA ² s |
| | | $t = 8,3$ ms; (60 Hz), sine | | $V_R = 0$ V | | 1,06 | kA ² s |
| C_J | junction capacitance | $V_R = 400$ V; $f = 1$ MHz | | $T_{VJ} = 25^\circ\text{C}$ | | 18 | pF |



| Package FO-B | | Ratings | | | | |
|---------------|--|----------------------|------|------|------|------|
| Symbol | Definition | Conditions | min. | typ. | max. | Unit |
| I_{RMS} | RMS current | per terminal | | | 100 | A |
| T_{VJ} | virtual junction temperature | | -40 | | 150 | °C |
| T_{op} | operation temperature | | -40 | | 125 | °C |
| T_{stg} | storage temperature | | -40 | | 125 | °C |
| Weight | | | | 20 | | g |
| M_D | mounting torque | | 1,8 | | 2,2 | Nm |
| $d_{Spp/App}$ | creepage distance on surface striking distance through air | terminal to terminal | 9,0 | 7,0 | | mm |
| $d_{Spb/Apb}$ | | terminal to backside | 10,0 | 10,0 | | mm |
| V_{ISOL} | isolation voltage | t = 1 second | 3000 | | | V |
| | | t = 1 minute | 2500 | | | V |



| Ordering | Ordering Number | Marking on Product | Delivery Mode | Quantity | Code No. |
|----------|-----------------|--------------------|---------------|----------|----------|
| Standard | VUO36-08NO8 | VUO36-08NO8 | Box | 50 | 502548 |

Equivalent Circuits for Simulation

* on die level

$T_{VJ} = 150^{\circ}C$



Rectifier

| | | | |
|--------------|--------------------|------|----|
| $V_{0\ max}$ | threshold voltage | 0,76 | V |
| $R_{0\ max}$ | slope resistance * | 7,9 | mΩ |



Outlines FO-B



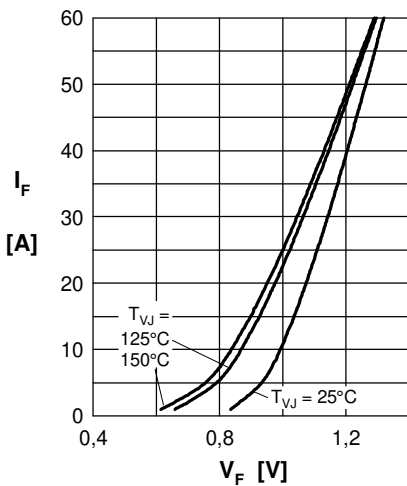
Rectifier


Fig. 1 Forward current vs. voltage drop per diode

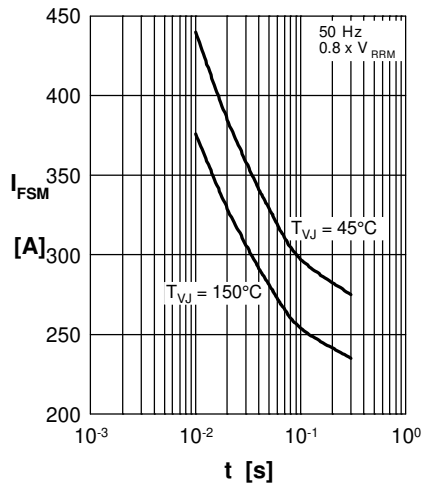


Fig. 2 Surge overload current vs. time per diode

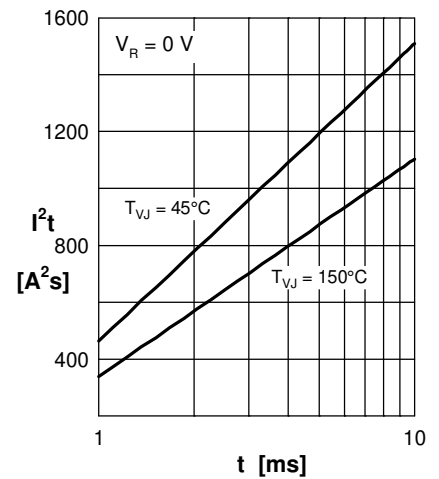
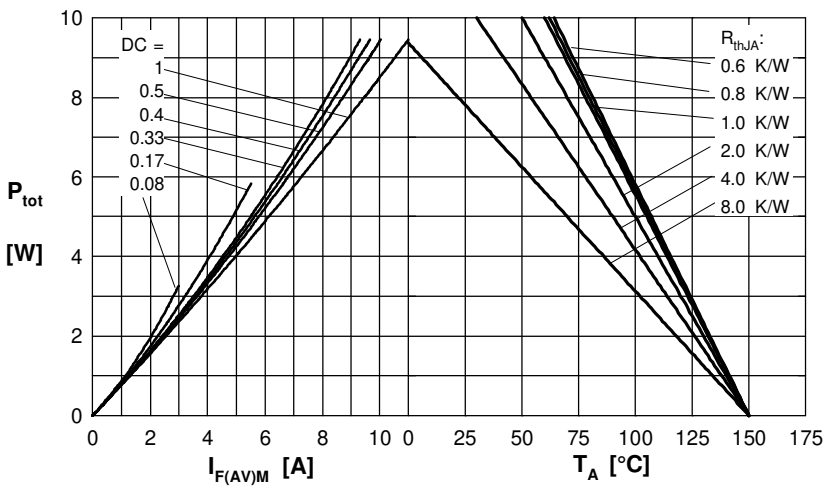

 Fig. 3 I^2t vs. time per diode


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

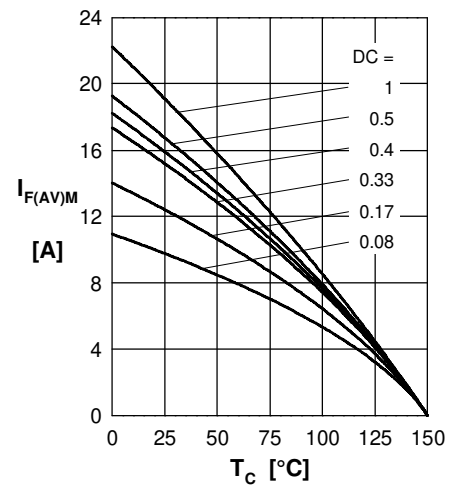


Fig. 5 Max. forward current vs. case temperature per diode

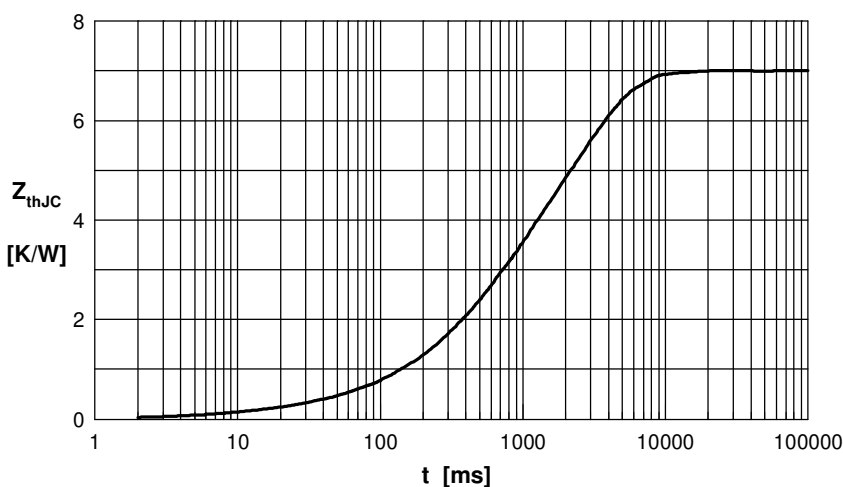


Fig. 6 Transient thermal impedance junction to case vs. time per diode

 Constants for Z_{thJC} calculation:

| i | R_{th} (K/W) | t_i (s) |
|---|----------------|-----------|
| 1 | 0.040 | 0.005 |
| 2 | 0.150 | 0.030 |
| 3 | 1.710 | 0.400 |
| 4 | 5.100 | 2.300 |